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**From:** Strynar, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5A9910D5B38E471497BD875FD329A20A-STRYNAR, MARK]  
**Sent:** 1/22/2018 3:49:53 PM  
**To:** Detlef Knappe [knappe@ncsu.edu]; Lindstrom, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=04bf7cf26aa44ce29763fbc1c1b2338e-Lindstrom, Andrew]  
**Subject:** RE: Air emissions

We looked for PFESA BP1 and BP2 in the Chemours monitoring wells. Here is what we found.

[http://edocs.deq.nc.gov/WasteManagement/0/edoc/744114/NCD047368642\\_NC%20DEQ%20GW%20Sampling%20Report%20from%20EPA%20Lab\\_20170913.pdf?searchid=f45659bb-78f1-49ef-ac75-ea0f02e8228b%20](http://edocs.deq.nc.gov/WasteManagement/0/edoc/744114/NCD047368642_NC%20DEQ%20GW%20Sampling%20Report%20from%20EPA%20Lab_20170913.pdf?searchid=f45659bb-78f1-49ef-ac75-ea0f02e8228b%20)

I think the 2641-34-1 if it was a carboxylic acid would not be a good thing at all. It is quite toxic I am told and should have a very long half-life I am told as well. No data to support this just word of mouth.

I think the conversion to the 2641-34-1 to turn a toxic waste product (HFPO-TA trimer acid fluoride) into a useful product solvent 3330-14-1 for synthesis is the aim.

Mark

**From:** Detlef Knappe [mailto:knappe@ncsu.edu]  
**Sent:** Monday, January 22, 2018 10:37 AM  
**To:** Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>  
**Subject:** Re: Air emissions

Interesting. The 2641-34-1 acid fluoride precursor does not show up on the list of compounds. Does this suggest their conversion to CAS 3330-14-1 is essentially 100%? I am not enough of a chemist to predict the stability of 3330-14-1. It does look relatively hydrophobic (no ionizable functional group), so if it is stable and is deposited from the air to the soil, it would likely move more slowly through soil into groundwater.

To my knowledge, no one has looked at Nafion by-product 1 in the groundwater surrounding the plant. It is very likely there... GEL labs can only do by-product 2.

Detlef

On Mon, Jan 22, 2018 at 8:37 AM, Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)> wrote:

I have it from a good source that this compound is generated from CAS 2641-34-1 to be used as a solvent for Nafion polymerization on site. If CAS 2641-34-1 (an acid fluoride) were to be released into the environment it would become Krytox (with a carboxylic acid). The compound is turned into CAS 3330-14-1 turning the waste product into a usable solvent onsite. I do not know about its degradability.

Mark

**From:** Lindstrom, Andrew  
**Sent:** Monday, January 22, 2018 8:25 AM  
**To:** Detlef R. U. Knappe <[knappe@ncsu.edu](mailto:knappe@ncsu.edu)>; Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>; Mark Strynar <[markstrynar@gmail.com](mailto:markstrynar@gmail.com)>  
**Subject:** RE: Air emissions

Detlef,

The C<sub>8</sub>H<sub>17</sub>O<sub>2</sub> compound (452.065 Da, CAS 3330-14-1) looks to me like it would be very volatile (BP 103 C according to the table), and potentially degradable at the one carbon with a hydrogen. I'd guess you'd end up with a 6 carbon perfluoromonoether – someplace down wind. What do you think?

Thank you,

Andy

**From:** Detlef Knappe [<mailto:knappe@ncsu.edu>]  
**Sent:** Sunday, January 21, 2018 11:45 PM  
**To:** Strynar, Mark <[Strynar.Mark@epa.gov](mailto:Strynar.Mark@epa.gov)>; Lindstrom, Andrew <[Lindstrom.Andrew@epa.gov](mailto:Lindstrom.Andrew@epa.gov)>; Mark Strynar <[markstrynar@gmail.com](mailto:markstrynar@gmail.com)>; Andrew Lindstrom <[ablindstrom@gmail.com](mailto:ablindstrom@gmail.com)>  
**Subject:** Air emissions

Andy and Mark,

I assume you are familiar with this document.

<https://files.nc.gov/ncdeq/GenX/DEQ%20Emissions%20Information%20Emerging%20Contaminants.pdf>

The modeled Nafion BP1 emissions are about half of the HFPO emissions - quite significant.

Any thoughts on the emissions of this compound:

[http://www.chemspider.com/Chemical-Structure.93034.html?rid=6958f0c5-c6d3-41b5-a44d-4e15471a7f9a&page\\_num=0](http://www.chemspider.com/Chemical-Structure.93034.html?rid=6958f0c5-c6d3-41b5-a44d-4e15471a7f9a&page_num=0)

Is it persistent? Reactive?

Best,

Detlef

PS. I am sending to Gmail as well since it looks like you might be staying home tomorrow...